UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/681,386	PRAHLAD ET AL.
	Examiner	Art Unit
	Jared I. Rutz	2187

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>26 February 2007</u>.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) <u>11-13</u> is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-10 and 14-20</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>3/13/2007</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   **Claims 1-20**, as amended on 10/31/2006, are pending in the instant application.

In response to the Requirement for Restriction/Election mailed 1/26/2007, applicant

elected group 1 (claims 1-10 and 14-20) without traverse. Accordingly, claims 1-10 and

14-20 have been examined in the instant Office action and claims 11-13 are withdrawn.

Applicant's arguments submitted 10/31/2006 have been carefully and fully considered,

but are considered moot in view of the new grounds of rejection presented in the instant

Office action.

Election/Restrictions

2.   Applicant's election without traverse of group 1 (claims 1-10 and 14-20) in the

reply filed on 2/26/2007 is acknowledged.

3.   Claims 10-13 are withdrawn from further consideration pursuant to 37 CFR

1.142(b) as being drawn to a nonelected invention, there being no allowable generic or

linking claim. Election was made **without** traverse in the reply filed on 2/26/2007.

Information Disclosure Statement

4.   The information disclosure statement (IDS) submitted on 3/13/2007 is in

compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure

statement is being considered by the examiner.

Claim Objections

5.   **Claims 19 and 20** objected to because of the following informalities: Claim 1

recites the limitation *"taking a snapshot of the primary volume in accordance with a*

predefined policy, the policy comprising one or more parameters for creating a quick

recovery volume". Claim 19 recites the limitation *"wherein the one or more parameters*

for creating a quick recovery volume comprise a persistence parameter of the quick

recovery volume". Claim 20 recites the limitation *"wherein the one or more parameters*

for creating a quick recovery volume comprise a data pruning parameter of the quick

recovery volume". It is unclear how a "persistence parameter" or a "data pruning

parameter" are parameters "for creating a quick recovery volume", as it would appear

that they are parameters for deleting or not deleting a quick recovery volume.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

7.   **Claim 16** is rejected under 35 U.S.C. 101 because the claimed invention is.

directed to non-statutory subject matter. Claim 16 is directed to *"A copy of a primary*

volume produced by the steps of". Claim 16 then recites steps for the creation of said

copy of a primary volume. However, Claim 16 is not directed to the method used for

creating a copy of a primary volume, but rather the copy of the primary volume itself. A

copy of a primary volume, even if limited to be stored on a computer readable medium,

is non-functional descriptive material, and accordingly is not statutory subject matter.

Claim 16 appears to be a product-by-process claim. MPEP 2113 states, with respect to

product-by-process claims:

> a.   *"[E]ven though product-by-process claims are limited by and defined by*
>
> *the process, determination of patentability is based on the product itself. The*
>
> *patentability of a product does not depend on its method of production. If the*
>
> *product in the product-by-process claim is the same as or obvious from a product*
>
> *of the prior art, the claim is unpatentable even though the prior product was*
>
> *made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964,*
>
> *966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color*
>
> *developer. The process of making the developer was allowed. The difference*
>
> *between the inventive process and the prior art was the addition of metal oxide*
>
> *and carboxylic acid as separate ingredients instead of adding the more*
>
> *expensive pre-reacted metal carboxylate. The product-by-process claim was*
>
> *rejected because the end product, in both the prior art and the allowed process,*
>
> *ends up containing metal carboxylate. The fact that the metal carboxylate is not*
>
> *directly added, but is instead produced in-situ does not change the end product.).*
>
> *>The structure implied by the process steps should be considered when*
>
> *assessing the patentability of product-by-process claims over the prior art,*
>
> *especially where the product can only be defined by the process steps by which*
>
> *the product is made, or where the manufacturing process steps would be*
>
> *expected to impart distinctive structural characteristics to the final product. See,*

e.g., In re Garnero, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979)

(holding "interbonded by interfusion" to limit structure of the claimed composite

and noting that terms such as "welded," "intermixed," "ground in place," "press

fitted," and "etched" are capable of construction as structural limitations.)<

8.   Accordingly, even if the resulting copy of a data volume were considered a

patentable product, the claimed copy of a primary volume is not structurally affected by

the recited steps.

9.   The Examiner recommends amending claim 16 to be directed to a method of

producing a copy of a primary volume to overcome the rejection of claim 16 under 35

USC 101.

Claim Rejections - 35 USC § 102

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11.   **Claims 1, 10, are 14-18** are rejected under 35 U.S.C. 102(e) as being

anticipated by St. Pierre at al. (US 6,366,986).

12.   **Claim 1** is taught by St. Pierre as:

b.   *A method of managing stored data in a storage management system, the storage management system including a storage manager, a media agent connected to the storage manager, and a primary volume connected to the media agent, the method comprising: taking a snapshot of the primary volume in accordance with a predefined policy.* Column 10 lines 35-40, discussing step 70 of figure 7, introduces a level zero backup.

c.   *The policy comprising one or more parameters for creating a quick recovery volume.* Column 11 lines 25-29, discussing step 80 of figure 8, show that the first step in creating a level zero backup is identifying which physical storage segments are to be backed up. Column 11 line 55 through column 12 line 30 discuss how this information is stored in a DD-TAB, which indicates the parameters for creating the level zero backup.

d.   *Indexing the snapshot by associating respective information with the snapshot.* Column 13 lines 7-19 show that the DD-TAB file can later be used to restore a backed up volume.

e.   *Copying the indexed snapshot to a secondary volume.* Column 13 lines 20-25 show that space is allocated on the backup storage system to receive the information to be backed up. Column 11 lines 40-44 show that the volumes are copied from storage system 52 to backup storage system 54.

f.   *And repeating the taking, indexing, and copying steps for a plurality of snapshots, in accordance with the predefined policy.* Figure 7 shows that performing a level zero backup is repeated when step 76 generates a 'yes'.

g.   *Wherein the snapshot of the primary volume comprises at least one file that has not been modified since the creation of a previous snapshot of the primary volume.* Column 10 lines 38-39 shows that a level zero backup of a partition backs up the entire partition, which would include both changed and unchanged files.

13.   **Claim 10** is taught by St. Pierre as:

h.   *A computer readable medium including computer executable code for managing stored data in a storage management system.* Column 12 lines 43-45 shows that the steps disclosed may be performed by software.

i.   *The storage management system including a storage manager.* Backup storage system 54 of figure 6

j.   *A media agent connected to the storage manager.* Logical volume manager 14.

k.   *And a primary volume connected to the media agent.* Column 2 lines 49-54 shows that the logical volume manager maps volumes A, B, and C onto the physical storage system

l.   *The code enabling the steps of: taking a snapshot of the primary volume in accordance with a predefined policy.* Column 10 lines 35-40, discussing step 70 of figure 7, introduces a level zero backup.

m.   *The policy comprising one or more parameters for creating a quick recovery volume.* Column 11 lines 25-29, discussing step 80 of figure 8, show

that the first step in creating a level zero backup is identifying which physical

storage segments are to be backed up. Column 11 line 55 through column 12

line 30 discuss how this information is stored in a DD-TAB, which indicates the

parameters for creating the level zero backup.

n.   *Indexing the snapshot by associating respective information with the*

snapshot. Column 13 lines 7-19 show that the DD-TAB file can later be used to

restore a backed up volume.

o.   *Copying the indexed snapshot to a secondary volume.* Column 13 lines

20-25 show that space is allocated on the backup storage system to receive the

information to be backed up. Column 11 lines 40-44 show that the volumes are

copied from storage system 52 to backup storage system 54.

p.   *And repeating the taking, indexing, and copying steps for a plurality of*

snapshots, in accordance with the predefined policy. Figure 7 shows that

performing a level zero backup is repeated when step 76 generates a 'yes'.

q.   *Wherein the snapshot of the primary volume comprises at least one file*

that has not been modified since the creation of a previous snapshot of the

primary volume. Column 10 lines 38-39 shows that a level zero backup of a

partition backs up the entire partition, which would include both changed and

unchanged files.

14.   **Claim 14** is taught by St. Pierre as:

r.   *A method for periodically copying changing data on a primary volume, the method comprising: capturing a first snapshot of data in a primary volume in accordance with a predefined policy.* Column 10 lines 35-40, discussing step 70 of figure 7, introduces a level zero backup.

s.   *The first snapshot being a block level copy of the data in the primary volume.* Column 10 lines 47-49 show that the segments to be backed up may be block level.

t.   *And the policy comprising one or more parameters for creating a quick recovery volume.* Column 11 lines 25-29, discussing step 80 of figure 8, show that the first step in creating a level zero backup is identifying which physical storage segments are to be backed up. Column 11 line 55 through column 12 line 30 discuss how this information is stored in a DD-TAB, which indicates the parameters for creating the level zero backup.

u.   *Storing the first snapshot.* Column 13 lines 20-25 show that space is allocated on the backup storage system to receive the information to be backed up. Column 11 lines 40-44 show that the volumes are copied from storage system 52 to backup storage system 54.

v.   *In accordance with at least a second criteria specified in the policy, monitoring for a change in any one of the blocks stored in the first snapshot.* Column 10 lines 41-47 shows that segments that contain changed data are tracked.

w.   *And storing a copy of a particular block when the monitoring determines*

that there was a change in the particular block from the first snapshot. Column

10 lines 50-51 shows that changed data segments are backed up.

x.   *Wherein the snapshot of the primary volume comprises at least one file*

that has not been modified since the creation of a previous snapshot of the

primary volume. Column 10 lines 38-39 shows that a level zero backup of a

partition backs up the entire partition, which would include both changed and

unchanged files.

15.   **Claim 15** is taught by St. Pierre as:

y.   *The method as recited in claim 14, further comprising: producing a copy of*

the primary volume using the first snapshot and any copies of blocks that

changed after the first snapshot, after at least one block has changed since the

first snapshot. Column 18 lines 11-21 introduces the synthetic level zero backup,

which is made by combining a level zero backup with one or more differential

backups.

16.   **Claim 16** is taught by St. Pierre as:

z.   *A copy of a primary volume produced by the steps of: capturing a first*

snapshot of data in a primary volume in accordance with a predefined policy.

Column 10 lines 35-40, discussing step 70 of figure 7, introduces a level zero

backup.

aa.   *The first snapshot being a block level copy of the data in the primary*

volume. Column 10 lines 47-49 show that the segments to be backed up may be

block level.

bb.   *And the policy comprising one or more parameters for creating a quick*

recovery volume. Column 11 lines 25-29, discussing step 80 of figure 8, show

that the first step in creating a level zero backup is identifying which physical

storage segments are to be backed up. Column 11 line 55 through column 12

line 30 discuss how this information is stored in a DD-TAB, which indicates the

parameters for creating the level zero backup.

cc.   *Storing the first snapshot.* Column 13 lines 20-25 show that space is

allocated on the backup storage system to receive the information to be backed

up. Column 11 lines 40-44 show that the volumes are copied from storage

system 52 to backup storage system 54.

dd.   *In accordance with at least a second criteria specified in the policy,*

monitoring for a change in any one of the blocks stored in the first snapshot.

Column 10 lines 41-47 shows that segments that contain changed data are

tracked.

ee.   *Storing a copy of a particular block when the monitoring determines that*

there was a change in the particular block from the first snapshot. Column 10

lines 50-51 shows that changed data segments are backed up.

ff.   *Producing a copy of the primary volume using the first snapshot and any*

copies of blocks that changed after the first snapshot, after at least one block has

changed since the first snapshot. Column 18 lines 11-21 introduces the synthetic

level zero backup, which is made by combining a level zero backup with one or

more differential backups.

gg.   *Wherein the snapshot of the primary volume comprises at least one file*

that has not been modified since the creation of a previous snapshot of the

primary volume. Column 10 lines 38-39 shows that a level zero backup of a

partition backs up the entire partition, which would include both changed and

unchanged files.

17.   **Claim 17** is taught by St. Pierre as:

hh.   *A method of managing stored data in a storage management system, the*

storage management system including a storage manager, a media agent

connected to the storage manager, and a primary volume connected to the

media agent, the method comprising: taking a snapshot of the primary volume in

accordance with a predefined policy. Column 10 lines 35-40, discussing step 70

of figure 7, introduces a level zero backup.

ii.   *The policy comprising one or more parameters for creating a quick*

recovery volume. Column 11 lines 25-29, discussing step 80 of figure 8, show

that the first step in creating a level zero backup is identifying which physical

storage segments are to be backed up. Column 11 line 55 through column 12

line 30 discuss how this information is stored in a DD-TAB, which indicates the

parameters for creating the level zero backup.

jj.   *Identifying characteristics associated with the snapshot and storing the characteristics in an index.* Column 12 lines 21-25 show that the physical storage segments corresponding to the to the data to be backed up are identified and stored in the DD-TAB.

kk.   *Wherein the snapshot of the primary volume comprises at least one file that has not been modified since the creation of a previous snapshot of the primary volume.* Column 10 lines 38-39 shows that a level zero backup of a partition backs up the entire partition, which would include both changed and unchanged files.

18.   **Claim 18** is taught by St. Pierre as:

ll.   *The method of managing stored data in a storage management system of claim 1, wherein the one or more parameters for creating a quick recovery volume comprise a destination volume parameter of the quick recovery volume.* Column 13 lines 7-19 show that the backup storage system's DD-TAB indicates where the backed up data is stored on the backup storage system.

Claim Rejections - 35 USC § 103

19.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20.   **Claims 2-4 and 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over St. Pierre et al. (cited supra) in view of Dunphy et al. (US 5,638,509).

21.   **Claim 2** is taught by St. Pierre as shown supra with respect to claim 1.

22.   St Pierre does not expressly disclose displaying the snapshots to a user.

23.   With respect to claim 2, Dunphy teaches:

mm.   *Displaying the snapshots to a user.* Figure 4 of Dunphy shows a graphical display of a data file restore process. As discussed in column 6 lines 16-21, items 42 and 43 represent a timewise progression of data file 41.

24.   St Pierre and Dunphy are analogous art because they are from the same field of endeavor, the design of data storage systems.

25.   At the time of the invention it would have been obvious to use the graphical display of Dunphy to manage the backup volumes of St. Pierre.

26.   The motivation for doing so would have been that such a system is simple to use, Dunphy column 2 lines 48-51.

27.   Therefore, it would have been obvious to combine Dunphy with St. Pierre for the benefit of simple management of backup volumes to obtain the invention as specified in claims 2-4 and 7-8.

28.   **Claim 3** is taught by Dunphy as:

nn.   *The method as recited in claim 2, wherein the displaying further includes displaying at least one of a respective date of creation of each snapshot, a*

respective persistence of each snapshot, and a respective location of each

snapshot. Column 8 lines 49-58.

29. **Claim 4** is taught by Dunphy as:

oo. *The method as recited in claim 2, wherein the displaying further includes*

displaying the snapshots to the user in a hierarchical format. Column 8 lines 58-

61.

30. **Claim 7** is taught by Dunphy as:

pp. *The method as recited in claim 4, further comprising: enabling the user to*

select at least one of the snapshots for restoration. Column 8 lines 34-39.

qq. *And restoring the at least one snapshot selected by the user.* Column 9

lines 17-58.

31. **Claim 8** is taught by Dunphy as:

rr. *The method as recited in claim 2, further comprising enabling the user to*

delete a selected one of the snapshots. Column 8 lines 52-61.

32. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over St.

Pierre et al. (cited supra) in view of De Meno et al. (2001/0029517).

33. **Claim 5** is taught by St. Pierre as shown supra with respect to claim 1.

34.   St. Pierre further teaches that snapshots can be made based on files needed by

an application, see column 11 lines 60-67, but does not expressly disclose that the

snapshots are associated with a corresponding application.

35.   With respect to claim 5, De Meno teaches:

ss.   *Associating each respective snapshot with a corresponding application.*

Paragraph 0008 shows the use of an application specific rollback system.

36.   St. Pierre and De Meno are analogous art because they are from the same field

of endeavor, the design of data backup systems.

37.   At the time of the invention it would have been obvious to one of ordinary skill in

the art to associate the level zero backups of St. Pierre with their corresponding

application as taught by De Meno.

38.   The motivation for doing so would have been that allowing application specific

rollback allows a user to access a specific version of data needed by an application, De

Meno paragraph 0008. Further, allowing application specific recovery lessens the

likelihood that a large amount of unrelated data needs to be restored, leading to faster

restoration.

39.   Therefore, it would have been obvious to one of ordinary skill in the art to

combine De Meno with St. Pierre to obtain the invention as specified in claims 5-6.

40.   **Claim 6** is taught by De Meno as:

tt.   *The method as recited in claim 5, further comprising displaying to a user a*

respective one of the snapshots in a screen corresponding to the respective

application. Paragraph 0033 discusses showing a user a window of available backups, as shown in figure 4.

41.   **Claims 9 and 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over St. Pierre et al. (cited supra) in view of Midgely et al. (US 5,604,862).

42.   **Claim 9** is taught by St. Pierre as shown supra with respect to claim 1.

43.   St. Pierre does not expressly disclose deleting snapshots after a defined period of time.

44.   With respect to claim 9, Midgely teaches

uu.   *Deleting a snapshot after a defined period of time.* Column 7 lines 18-21 shows that a redundant version of a file is not required to be stored in disk cache 120, and can be erased.

45.   St. Pierre and Midgely are analogous art because they are from the same field of endeavor, the design of data storage systems.

46.   At the time of the invention, it would have been obvious to one of ordinary skill in the art to delete a snapshot after a defined period of time.

47.   The motivation for doing so would have been to maintain space in the disk cache for newer versions of copies, Midgely column 7 lines 14-15.

48.   Therefore, it would have been obvious to one of ordinary skill in the art co combine Midgely with St. Pierre for the benefit of maintaining space in the backup storage system to obtain the invention as specified in claims 9, 19, and 20.

49.   **Claim 19** is taught by Midgely as:

vv.   *The method of managing stored data in a storage management system of*

claim 1, wherein the one or more parameters for creating a quick recovery

volume comprise a persistence parameter of the quick recovery volume. Column

6 line 65 through column 7 show that the newest version of a copy is always

available in the cache or on one of the tapes of the autoloader. Accordingly,

policy comprising a persistence parameter is that the most recent copy persists

in the faster storage.

50.   **Claim 20** is taught by Midgely as:

ww.   *The method of managing stored data in a storage management system of*

claim 1, wherein the one or more parameters for creating a quick recovery

volume comprise a data pruning parameter of the quick recovery volume.

Column 7 lines 2-6 show that versions of the most actively used files on the disk

cache are maintained. Accordingly, policy comprising a data pruning parameter

is that less actively used copies are pruned from the disk cache to make room for

more actively used copies.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jared I. Rutz whose telephone number is (571) 272-

5535. The examiner can normally be reached on M-F 8:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Jared I Rutz
Examiner
Art Unit 2187

Brian R. Peugh
Primary Examiner
5/14/07

jir